

The Lead-Miners' Standard Dish or Measure.

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PLATE XXII illustrates what is known in old lead-mining customs as a Miner's Dish or Measure.

It is an ancient statutory measure (I refer to its use and not to its branded date), but the exact capacity seems to have been determined for the first time when the Brazen Dish for the Wapentake of Wirksworth was made in the reign of Henry VIII. These dishes, after being tested (sized) by the Standard and certified by the Barmaster, were used by that official, or his deputy, for measuring the lead ore at the mine, after the same had been washed and (in later times) graded in several stages by sieves and water troughs, which separated the ore from all lighter material by gravitation. The same principle operates to-day on more efficient lines, but the simple hand methods were in use for many centuries. With the sixteenth century progress seems to have been rapid, and it seems probable that the many improvements in recovering the ore led to the making of a Standard Measure to bring strict uniformity into the Wapentake. The inscription on the Brazen Dish is as follows:—

This Dish was made the IIII day of October, the IIII year of Henry VIII before George Earle of Shrewsbury, steward of the Kyng's most Honourable household and also Steward of all the Honour of Tutbury by the

assent and consent as well of all the Mynours as of all the Brenners within and adjoining the lordship of Wyrkysworth percell of the said honour. This dishe to remayne in the Moote Hall at Wyrkysworth hanging by a cheyne so as the merchants or mynours may have resorte to the same at all tymes to make the trew measure after the same.

This measure is often loosely spoken of as containing 14 Winchester pints but this matter is referred to later on.

The word "dish" itself provokes inquiry, seeing that the Old English meaning of the word scarcely fits an object of deep rectangular form. It applied to an open vessel more or less flat, and is not very different in its usual application to-day. Its origins are both Latin and Teutonic. The former peoples used the word 'discus' for a quoit, or flat round object used in their sports. "Discobolus" is the name for a famous piece of statuary by the Hellenistic sculptor, Myron, representing a disc-thrower. It seems therefore that the earliest measures, were round.

Two royal inquiries into the lead-mining customs were held at Ashbourne in the thirteenth century, and the second of these, in the year 1288, contains the statement that the miners findings must be measured 'per discos.' Obviously, this provision only confirms a custom already deeply bedded in antiquity, and the still deeper evidence we possess concerning the Anglo-Scottish monastery of Repton, as early as A.D. 714, backed by Roman pigs of lead from the time of the Emperor Hadrian, although not enlightening us as to methods of measuring or handling the ore, leaves us always in lively speculation as to a possible continuity of work and method from the beginnings of the story. Speaking then of these measures, it seems that in their first form, they were just round baskets of wicker-work or skins. We have more than a

hint that even after the setting up of the rectangular Standard in the sixteenth century some round dishes continued in use in the Wapentake. It is only common-sense to assume this. The Brazen Dish itself, was not for measuring ore but solely to stabilise the capacity of the working dishes. Hence, no doubt, many miners continued to use their old measures, sized to the Standard in due course. But the box form would soon prove its superiority in actual use, its build would be more conducive to the handling of heavy loads of loose material, and further, the measuring of the contents could be more exact. Notwithstanding these points we should remark that the measures of the King's Field in the High Peak still keep the primitive form, being strong round bowls of oak, and there is no record of a Standard, so called, in that region. Further, as to the Brazen Dish; we may take it for granted that this new Standard for the Wapentake was itself designed and cast to conform to already existing custom in the matter of capacity. There is no reason to suppose any break in continuity in this respect. It may have been made for purely administrative purposes, to tighten up loose methods in a rapidly growing industry.

The customary measures of the Wapentake and the High Peak respectively, do not differ very much. The latter has varied from 15 to 16 pints but has no master measure. The dishes in that region were somewhat loosely sized by the Barmaster stroking his hand over the top. It is a puzzle of much historical interest as to what precise circumstances led to the making of so remarkable an object as the Wirksworth Dish which is, without doubt, a fine piece of craftsmanship, massive and finished, with a ring like a deep-toned bell. As provided in the inscription, in old English characters, which runs round the two sides, it is chained to the wall in the Moot Hall. But it does not 'hang.' It rests within a massive oak chest close by, and

is safeguarded under lock and key. The Moot Hall is a miserable substitute for the ancient half-timber building of three bays which formerly stood in the market place. Owing to decline of lead mining in this region, the Barmote Court, to which it belongs, lets it off, and it serves as a nonconformist chapel and a Court of Justice.

A curious provision occurs in the Mining Customs Act of 1852. The first draft of the Act provided that if at any time the Standard Dish should be lost or destroyed another should be made which would contain 14 pints (of water), but on being amended in Committee the Act provided that a Dish or Measure should be made to conform with that of the High Peak, which is there declared to be 15 pints, thus the aim was for uniformity in case of change. The Brazen Dish, however, seems destined for a long reign.

Let me remark here that the King's Dish (I use the term in the abstract, to mean any Dish certified after this Standard) is not in itself a means of measuring for sale purposes. Its customary use is solely to determine the ancient dues 'from the ore' lot, cope, tithe, etc., which were a fixed proportion of ore won from the mine. When, in the growth of the industry it came to a question of the intrinsic value of the ore, as against its mere bulk in the dish, some method of assessing quality and smelting value became necessary to meet market conditions. Hence, while measurement by dish has always kept its ancient significance, weighing and various means of assay have been adopted for trading purposes. It is this continual progress during the past few centuries that makes it so difficult to describe any method as in use at a particular time. We may take it for granted that it was the smelters and other traders who first questioned the assize by bulk, and not the receivers of the dues. These are not, strictly speaking liable to adjustment per quota value, the original provisions being quantity by measure. In

primitive conditions when the ore lay uniformly rich and plentiful this assessment by measure would probably raise no quibbles, but with trade expansion real value would come more and more under scrutiny.

The miners too would be quick to take advantage of superior smelting values to get better prices. Hence, although the customary dues were not affected by quality, means other than measuring were rapidly forced into use.

This close association of miners and smelters explains why the two classes of workers are named together in the inscription on the Brazen Standard, as having agreed to its being made. Weighing methods had long been in use but we do not know exactly how. The Ashbourne Inquest (1288) says the miners shall have weights for their lead (not ore), and measures for their ore, which looks as though weights were used *after* smelting and not to check the dish values in ore.

However, this may be the deeply established status of the Dish is a persistent thread through all the vicissitudes of history and the enactments of Edward VI and Philip and Mary in times of great activity do not alter the case.

But whatever were the means of comparing dish capacity with density (productivity), weighing the dishes would do much towards solving the question. The heavier the ore the richer its nature, as a general rule.

At a Great Barmote Court in the third year of King Edward the Sixth the following order was given: "We will that the Lord of the Field shall make an able Dish from this day forth between the Merchant Buyer and the Seller, and against every good time as Christmas and Whitsuntide two able Dishes upon pain for every time wanting (if it be called for) to forfeit for every time $\frac{3}{4}$ to the King." The curious terminology of this provision need not obscure for us the real meaning. Obviously it refers to wooden dishes which could be carried about to the mines. Time after time in records of the Barmote

Courts this resolution is repeated and it seems as though the Barmasters were often short of dishes when called to the mines. Penalties are constantly being mentioned, although a note in the Miners Guide (1748) says this very seldom occurred in the writer's time. Penalties are threatened also against makers or keepers of counterfeit measures. Another provision, strictly enforced, was that the buyer of ore must not touch the Dish or Measure with hand or foot, or shake it to obtain more ore, the Barmaster was to see that fair measure was made.

Barmasters' measures were Barmote property. They were not the private property of the miners or buyers. Nor was there ever a surplus of these. In times of much stress, when many mines, small and great, were in operation, it was allowed to the miners if the Barmaster did not present himself at the stated times for measuring, to measure small quantities in the presence of two persons (usually jurymen), the duties payable being strictly reckoned and discharged.

Now as to these working dishes. They were 'sized' by the Brazen Standard at fixed times, every quarter or half-year, according to decisions of the Court, and probably the testing times depended for their frequency on the amount of work being done and the consequent wear and tear of the measures themselves. The process was, and is, to fill the Brazen Dish with small seed, now-a-days turnip seed, and clean off the top with a straight-edge. The seed was then carefully spooned into the wooden measure to be tested. If it contained more than it should do through wear and tear the top edges were lowered by a plane, if less, the block-ends of the dish were gouged out with a chisel to the true measure.

We quote from the above-named Inquisition:—"And of the mine won in work of this kind in the fee (field) of Our Lord the King, the lord king shall have for his royalty, the thirteenth dish, called the lot, as they have hitherto used."

So that this royalty is older than the said Inquisition. It may very well go back to Anglo-Saxon times. Church dues or tithes, though not mentioned here, are quite as ancient. They still go "by the Dish", but the tenth has long since been reduced. Also, by immemorial custom, a 'Freeing Dish' was required from every new mine, or to establish a new title to an old mine. Out of fourteen dishes then, at the beginning of any mine, eleven belonged to the miner. Afterwards, eleven out of every 13. Buyers of the ore, the smelters or brenners (burners), has also to pay a duty called Cope, i.e. sixpence for every nine Dishes, in the Wapentake, fourpence in the High Peak. To repeat, the King's Dish stands for the dues to State and Church, and in ancient custom, rather than in actual law, has its appropriate antiquity. It is perhaps the most remarkable measure of its kind in the kingdom, and every wooden trough 'duly sized' and certified by a Barmaster is its undisputed deputy for practical uses, and a symbol of immemorial rights.

In the earliest days when lead-ore lay in rich masses ever ready to be worked, only the best was taken. It was broken with a hammer or 'bucker' into small pieces and washed and measured with little effort to obtain second rate stuff. It was only this best sort (bing) which paid the duties, and passed through the Dish. But with constant improvement in methods the very small, sometimes dusty material, was ultimately recovered and under the name of smitham was made subject to Dish measurement by a Court Action of 1761. There were many steps in this improvement of grading after the sixteenth century, by picking and washing, but the Dish always held its part, measuring the duties through all periods of change and progress.

Old-fashioned methods were very laborious and aged miners to-day with long memories tell many stories of hard and exacting work. On measuring days, once or twice

a week according to the volume of output, the Barmaster took a dish to the mine and closely superintended the operations. The filling and counting began. Every ninth dish was the cope dish on which 6d. was due to the Barmaster, plus 3d., the measuring fee. Every twenty-fifth was the lot and every fortieth the tithe charge. Incomplete numbers for lot and tithe were carefully recorded. As a practical miner said to the writer recently "You must always remember where you left off, when the next measuring days comes round." "But," he added with dry humour, "The Barmaster will see to that." In boom days, when large quantities of ore had to be dealt with, say nine or ten tons, efficient short cuts had to be taken. Sample dishes were selected more or less at random from the mass, weight compared with dish measures, the remaining ore weighed, and some workable approximation arrived at. We are told that it was at the Gregory Mine, Ashover, in 1803, that the two methods of weighing and measuring were first used at the mine-head.

To revert to the counting, or we should rather say, computation. We have explained how the old laborious methods were gradually supplanted. But let us take even a more modern case. A given quantity of ore computed by measuring and weighing, and divided by the average weight per dish, gives, we suppose, 270 dishes. This reckoning will be approximately true as pre-experience has proved. The number 270 divided by 25 for lot and 40 for tithe will give the customary dues, indivisible remainders being carried forward as 'new ends' and brought forward as 'old ends.' Cope, a pre-emption charge of 6d. per load of nine dishes, is found by a similar process, also the measuring fee of 3d. Thus the old liability to discrepancies between mere measurement and intrinsic value tend to be lost in averages and are not much regarded to-day. We see, however, that amidst all this change the Dish holds its place as arbiter of

ancient dues. These are now paid over in current prices, but, incidently, the Barmaster is under no obligation to measure for tithe, which, however, falls conveniently into the normal programme. These are the modern methods notwithstanding that the industry has declined almost to extinction. The Mill Close Mine at Darley Dale is not in the Wapentake.

The above remarks will make it clear why all the Dishes used in the Wapentake were, necessarily of uniform capacity, seeing that all miners were working on uniform customary lines, and under the jurisdiction of the same Court of Customs, the Great Barmote Court. What this capacity was in the very earliest days we have no vestige of a record. The Brazen Dish in the Moot Hall of Wirksworth, the absolute standard since it was made in the fourth year of the reign of Henry VIII (1513), is the earliest evidence on this matter. It is said to contain 14 Winchester Pints, thereabout, for while one writer, J. Rosewarne (1836), says it contains a little more than fourteen, 472 cubic inches, we find that fourteen times one-eighth of a Winchester gallon (dry measure) equals 479.92 cubic inches, which makes the Standard a trifle less than fourteen, about 8 cubic inches. May we suppose that this small error is merely accidental to the casting of the measure? Its dimensions as given by the same writer are as follows in inches and decimals:—

Length of top	21.5.
Length of bottom	20.7.
Breadth of top	5.3.
Breadth of bottom	5.2.
Depth	4.26.

A block of solid lead of these dimensions would weigh nearly 200 lbs.

The Standard itself is very massive. Its weight when empty is about equal to its normal content of ore. The average in the Wapentake has long been estimated at

about 65 lbs., but the actual figure is got by the steelyard. In large consignments of ore, such as we have described above, the weight is taken from the truck load as weighed by the Railway Company.

This article concerns itself with the historical interest of the King's Dish in the Wapentake, and both here and in the King's Field of the High Peak, if we could have the records, it would certainly appear that as the ore was dressed ever finer and finer it lay closer in the measure and continued to increase the weight of the content. Yet, in any case, the degree of richness of the ore itself had its effect. The writer has talked to several old and experienced miners about this. One told of a mine near Bonsall which gave ore weighing 70 lbs. to the Dish, and another mine not far away giving only 52 lbs. I have heard of many such variations within living memory, but no case quite so remarkable as that recorded by a writer already quoted, J. Rosewarne, who tells of a mine at Carsington which yielded 75 lbs. to the Dish, and the ore when smelted produced 81 per cent. of pure lead.

Living experience is more interesting than records, but we note that Hardy's edition of "Houghton's Compleat Miner" (1748), gives on p. 212 a table of comparison between the prices of weights and measures ranging from 40 to 80 lbs. per Dish at £4. 10s. per ton. He shows that a ton of lead (21 cwt.) would contain 36 dishes and one-sixteenth of a dish, when each dish weighed 65 lbs. At 20 cwt. to the ton (120 lbs. to the cwt.), the dishes of the same weight required to make a ton would be 36, and three-quarters and one-sixteenth of a dish, or four loads without the fractions in each case.

Obviously these reckonings must have been dealt with by some recognised system, and it was one of the uses of the many ready reckoners compiled at the time. It is Hardy, I believe, who advises the miners to use money and not ore for these fractional dues, which in the usual

way seem to have been carried over to the next transaction. But we are still left in doubt as to whether, at the period we are dealing with, the minute fractions were not disregarded altogether.

The Dish, of which we show a photograph, branded V.R. 1858, was used during the peak of the trade in the nineteenth century. These dishes were of oak and stood much knocking about before they were discarded. In the illustration the marks of the gauging are clearly visible, but no doubt some of them are the original adjustments to the Standard when the measure was first tested for use, and branded with the royal sign of the King's Field in the Wapentake. The heavy block ends were provided for a margin of adjustment to begin with as well as for later corrections of capacity. Also they were very necessary to strengthen the dish against much strain when full. There is no dish now in commission of anything like the same antiquity.

Barmasters and their deputies were the proper custodians of these measures, but it was also provided that on occasions of stress of business they might be taken to the mine, when required, by the miner, by two persons, we suppose, two jurymen by preference. This Dish was used by Mr. Job H. Cardin, of Dale House, Matlock, a jurymen whose ancestors had been prominent in the mining business since the middle of the eighteenth century. Several records of Articles by the Grand Jury of the time, signed by the twenty-four, the "Body of the Mine," bear the name of Samuel Cardin, first on the list.

I knew Mr. Cardin very well, and more than once talked to him about the geology of the mines. He has now been deceased many years and this Dish came into my possession through the kind offices on a mutual friend, Mr. A. E. Morten, of Matlock Bath, who has also passed on to me numerous curious relics of Old Derbyshire, domestic

and otherwise, which I have given to Mr. F. Williamson, Director and Curator of the Derby Museum.

The Dish is also now given to the Museum. A few more words seem necessary concerning it. The cubic capacity I have not tested, but this does not require that the dimensions should correspond with the Standard in all directions. Dishes in commission could vary in dimensions so long as the contents came out the same, They might look the same to the casual observer, but the carpenters, as we have explained, depended for the final adjustments on the Barmote method.

The measurements are (taking the centre line between the curved ends:—

Length of top	25 inches.
Length at bottom	24 „
Width (uniform)	6 „
Depth (varies between	$3\frac{1}{16}$ and $3\frac{3}{16}$ inches.

Thus, although shallower, it is longer than the Standard Dish.

Notwithstanding the decline of general mining in the Wapentake the writer is acquainted with a miner who has passed his lead-ore through the Dish of the Wapentake recently, with the customary method; and the Grand Jury, the “Body of the Mine” is still in being. Old hands still tell of places where lead is ready to be brought up if prices should rise to make it profitable. There is a private lawn known to some of us where a very large mass of solid lead-ore lies a few feet below the grass, and there are unexhausted mines which have been shut down through different interests.

This article, which by no means completes the enquiry, would not have been possible without much help. In addition to the above acknowledgments the writer here records his indebtedness to Capt. J. D. B. Symonds of Wirksworth, Steward of the Barmote Court, and Mr. John Mort of Manchester, Barmaster.